



## **Private sector investment in the biofuel value chain in Ghana seen in an innovation system perspective**

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## Private sector investment in the biofuel value chain in Ghana seen in an innovation system perspective.

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# Objectives, concepts and approach

## Research question

- “ Why and how were large-scale export productions of biofuels established in Ghana? Why did the investment projects fail?

## Conceptual framework

- “ MLP framework (transition framework) for analysis of technology niche development, including adoption theory and hype cycles
- “ Global value chains perspective for being attentive to investment drivers and international linkages

## Methodology:

- “ Literature review, review of journal papers
- “ Interviews with stakeholders presenting different strategic interests: (Investors, CEO's, plant managers, farmers, universities, government (energy commission))
- “ Field visits to producers and plants

# The hype of Jatropha in Ghana



## 2006-2008: Rush for land and large scale investment

- Oil price, EU-blending,
- National policy,- NGO
- Massive investment,
- First critical reports

## 1995-2005: Slow preparation stage

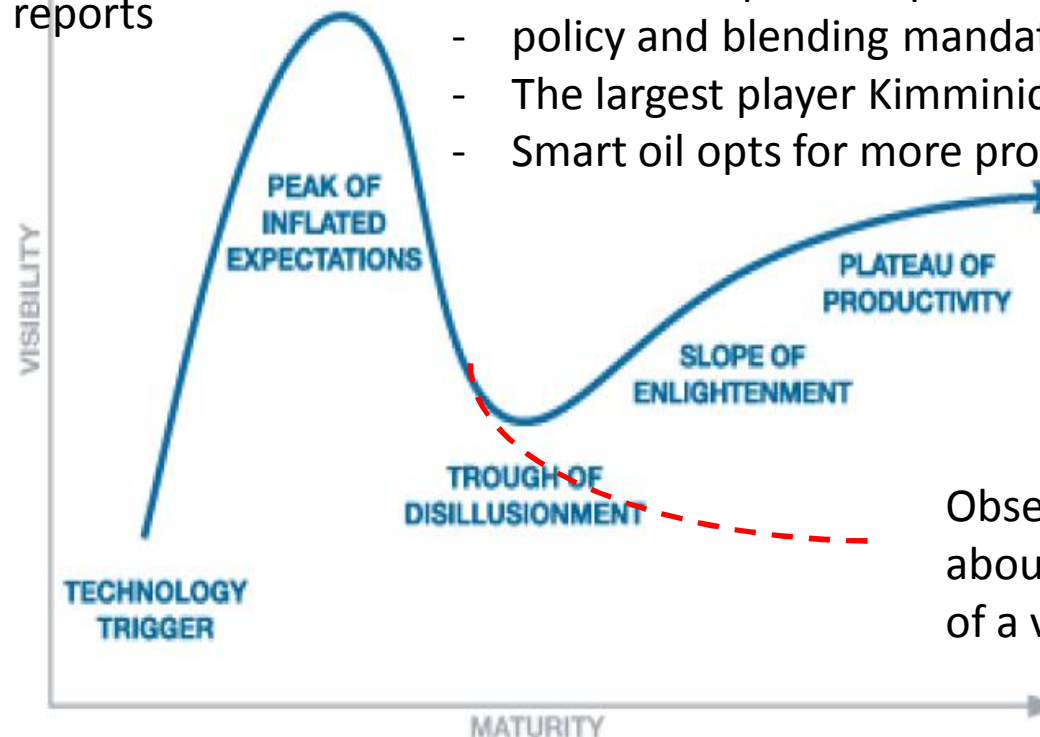
- oil price
- transport fuel
- Donor projects,
- local champion

## 2009-2011: Crises

- Financial crisis, oil price
- Oil-exploration, national policy
- High cost and low yield
- Number of enterprises go bankrupt or hibernate
- Kimminic and Smart oil expands

## 2012-2015: Liquidation and hibernation

- access to capital, oil price
- policy and blending mandate postponed
- The largest player Kimminic stops payment
- Smart oil opts for more profitable value chains



# High expectations became reasons for failure

The hype around Jatropha also became the reason for its likely failure.

- “ At the landscape level, the **overheated international finance markets** leading up to the financial crisis in 2008, was a driver until 2008, and became a hindering factor after 2008 influencing as well fuel prices as access to capital.
- “ At the niche level, the claim of Jatropha being an **'environmental wonder crop'** was used as a mobilizing metaphor for involving actors and access to capital, and led to disappointment when these claims were not achieved.
- “ **Exaggerated claims of access to land** was a strong driver for access to capital for the individual company, but the resulting accuses of land grabbing and the fuel vs. fuel discussion became a strong hindering factor for the niche development in general.



# Value chain governance

## Important requirements for market access

- “ Physical quality (chemical composition, purity)
- “ Environmental quality (Traceability and sustainability; certification)
- “ Volume (high)

## Implications

- “ Requires strong coordination along the chain
- “ Requires large amount of capital
- “ Important for who are able to participate in the value chain.

## Lead firms

- “ Oil companies (refineries, blenders, wholesalers, retailers)
- “ Foreign-owned biofuel producers (they control the resource)

# Value chain governance

## Markets:

- “ Local small scale market (straight vegetable oil, low demand)
- “ Local markets (blending mandates, uncertain demand)
- “ Export markets (lowest risk in terms of demand)

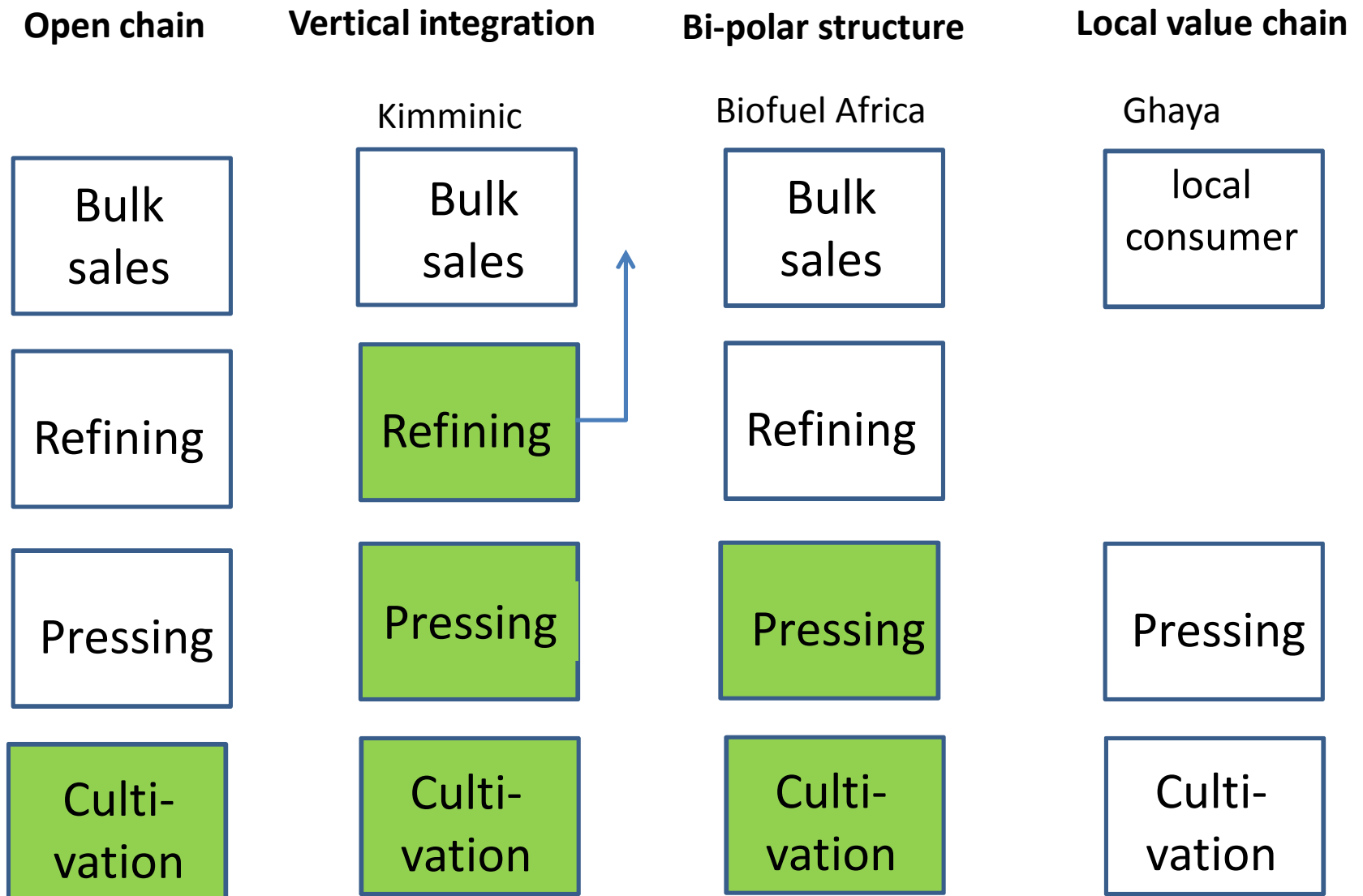
## Strategies:

- “ Involving oil-companies as main shareholders, ensuring capital and export market for crude oil for refining in EU
- “ Establishing own biofuel processing/refining capacity ensuring access to export market and opportunity for supplying local market
- “ Establishing local value chains

## Export was contingent on large quantities of biofuel

- “ Need of rapid growth to ensure volume
- “ Need for vertical integration in value chains to reduce risk and bottlenecks (production of seedlings, production of seeds, extraction, refinery and transport to oil companies in Europe)
- “ Need of large amounts of capital

# Value chain governance





# Conclusion

- “ The agricultural sector in a developing country is unable to respond 'quickly' to increased demand for biofuels
- “ Analysis of GVC dynamics, aspects and/or structures is essential for understanding biofuel niche development
- “ International actors, policies and linkages are critical for success or failure of biofuel value chain development
- “ National protected regimes were not important in this case (mainly export projects)
- “ Investors wanted to control large parts of the value chain, from production up to wholesale.
  - “ Strong vertical coordination was deemed necessary to deliver what the EU market wanted.
  - “ Access to capital and buyer commitment became critical aspects

# Kimminic, 5,000-10,000 ha. abandoned and overgrown with weeds





Kimminic,



# A biodiesel factory - 400 tons/day

Abandoned during construction, due to  
lack of finance





# Kimminic

## - dismantled and stolen machinery





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